b) to mount a plurality of amorphous metal teeth around the interior surface of the yoke

c) to build moulded tooth configurations of amorphous metal particles and a bonding material (resin)

d) to preform (wound) laminations that are bonded together with a suitable resin.

Rosenberry writes: "a suitable commercial epoxide resin, such as one of the commercially available resins now commonly used to insulate the laminations of conventional stators...a suitable polyester resin may be substituted for the epoxide resin."

Polyester or epoxide resins are not soft magnetic. The permeability of all known resins is like air. Resin alone can not create a soft magnetic body. Every volume resin fill in a soft magnetic body increases the resistance of the magnetic flux and decreases the flux density.

Rosenberry does not give an indication to increase the flux density, but, on the contrary , lowers flux density by filling part of the tooth volume with resin. Neither does the applicant find an indication of the use of cobalt in Rosenberry (4,392,072). The statement "teeth (cobalt)" is thus not factual.

2. The applicant shows below that the statement, "Rosenberry also discloses a region facing the air gap consisting of a material having higher magnetizability than the remaining region of the soft magnetic body (2) disposed more distant from the air gap,..." has no basis in fact.

Rosenberry describes essentially realization possibilities for the yoke or teeth:

1. moulding the parts from amorphous metal particles
2. mounting a plurality of wound ribbons of amorphous metal bonded together with resin

Rosenberry does not explain which of the two possibilities achieves the higher permeability or saturation flux density. It is clear only that in both variants resin is used to hold the amorphous material together. This causes both variants to be inferior to metal alone or to axially stacked crystalline sheets, both of which utilize the space better. Furthermore, the objective of Rosenberry 4,392,072 is not the increase of flux density. Thus, the statement does not have a basis in 4,392,072.

3. The applicant shows below that the statement, "Rosenberry also discloses, ...soft magnetic body possessing in total, a larger cross section in direction of the flux than the sum of said teeth (3 - 6) that are disposed toward said air gap" is lacking a basis in fact.

In Fig. 2 to 5, Rosenberry shows only parts of a stator without defining how many teeth are belonging to a magnetic circuit. Only Fig. 1 shows a complete stator with a yoke and 20 teeth. If the machine has 2 poles, 10 teeth each belong to the magnetic circuit of one pole. The flux of 5 teeth is concentrated in the yoke. In the 2-pole embodiment, in direction of the flux, the air gap surface of 5 teeth has to be compared to the yoke cross section. Obviously, in direction of the flux, the tooth surface is distinctly larger than the yoke surface.

This holds also in Fig. 2 or 3, since the area of the cross section of the yoke must always be compared to the sum of all tooth surfaces in direction of flux, and for large poles, this can be 5 teeth for instance.

Since Rosenberry does not define in Patent 4,392,072 how many poles the machine comprises or how many teeth are used in direction of the flux parallel in the same magnetic circuit, the number of teeth per magnetic circuit is pure speculation. The pole shoes in Fig. 1 and 2 show that Rosenberry is consciously enlarging the surface for the flux in the tooth ends at the air gap.

The statement is thus speculative and lacks any basis in 4,392,072.

4. The applicant shows below that the statement, "...said teeth (grain oriented)" is not correct. Rosenberry writes in column 1, line 46 - 52: "Due to the thinness and ductility of amorphous metal strips that are available commercially, it does **not** appear to be practical to form desired geometric forms in them by conventional punching operations like those now used to punch winding-receiving slots in grain oriented silicon steel stator laminations that are crystalline in structure." (Emphasis by applicant.)
It is the only location where Rosenberry mentions grain-oriented silicon steel. The applicant respectfully points out that there is the word "**not**" in this statement. Nowhere does Rosenberry write that he is using grain-oriented material.

His structural design is based on amorphous metal alloys and they can not be grain-oriented. It is thus not possible that Rosenberry uses grain-oriented material in the embodiment described in 4,392,072!

The statement that Rosenberry discloses in 4,392,072 the invention with the exception of a yoke consisting of crystalline material is thus erroneous or speculative in those 4 points.

5. The applicant shows below that the statement that by combination with Rosenberry 4,403,401 it would be obvious for a person skilled in the art "to modify the electric motor of Rosenberry 4,392,072 with the stator material of Rosenberry 4,402,401 for the purpose of obtaining high induction in the stator" is also not correct.

The structural design and production method of Rosenberry 4,392,072 is specifically designed for the use of amorphous material. A replacement of amorphous particles and ribbon by crystalline particles and ribbons does not make sense for a person skilled in the art, because crystalline material, unlike amorphous material, can be punched and bundled in laminations. Besides, punching and laminating of electric steel sheet is cheaper than the production of many little coils or of particles that are mixed with resin. Also, magnetic flux density in laminations of crystalline sheets is higher than in any variant of Rosenberry 4,392,072. Furthermore, with crystalline sheets it is possible to produce yoke and teeth in one punch step. There is just no incentive to assemble the stator from several parts.

In summary: Rosenberry, in 4,392,072, expressly points out that amorphous material is not punchable and, based on this, justifies the necessity of the new (costly) structural design. If the special feature of using amorphous material is disregarded, a person skilled in the art can not recognize an advantage of Rosenberry's design in 4,392,072 as compared to a common design using crystalline material.

Taking the above 5 points into consideration, the applicant is of the opinion that claims 1 to 3 of the present application are patentable. Rosenberry 4,392,072 does not show the characteristics of claim 1 of the present invention.

Reconsideration and allowance of the application is respectfully requested.

Respectfully submitted,

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